



Patent
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application of)
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Alexander BEECK et al.) Group Art Unit:
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Application No.: 10/002,189) Examiner: Unassigned
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Filed: December 5, 2001)
)
For: TOOL AND PROCESS FOR)
CASTING A SHAPED PART FOR)
THE PRODUCTION OF A TURBINE)
BLADE)

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application in the following manner. The original application was filed in German. Applicants have translated the original application into English, and request that the English translation be used for examination purposes. Amendments to the English translation have been made to the specification by way of a Substitute Specification. The amendments are incorporated in the formatted Substitute Specification submitted herewith. A copy of the certified translation of the original application, together with a marked-up copy of the specification version showing the amendments made to the original application and the Substitute Specification, in accordance with 37 C.F.R. §1.121 (2001), are also submitted herewith. No new matter has been introduced in these amendments to the original specification.

REMARKS

The above-amendments to the specification and claims have been made to add headings and to put the claims into proper U.S. format.

In particular, the specification has been substituted with a substitute specification, excluding the claims. According to 37 C.F.R. §1.125, (1) no new matter has been added to the substitute specification; and (2) a marked up version of the substitute specification showing all changes to the specification is enclosed. In addition, the claims have been amended to correct minor informalities, and have not been changed in scope.

Early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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Marked-up Claims 1-13

1. (Amended) A tool [Tool] for casting a shaped part for [the] production of a turbine blade, with several tool blocks [(1, 2, 3, 4)] which, when assembled with positive engagement in a predetermined manner, form a cavity [(5)] for the shaped part, into which cavity flowable material can be introduced by means of one or more access apertures [(6)], wherein

at least one of the tool blocks [(1, 2)] receives a rotatable or displaceable insert or inset [(7, 8)] which borders on the cavity [(5)] with a surface and which can be fixed in different positions and/or orientations with respect to the at least one tool block [(1, 2)], so that different cavity geometries are formed in the different positions and/or orientations of the insert or of the inset [(7, 8)].

2. (Amended) The tool [Tool] according to claim 1, wherein
the insert or inset [(7, 8)] determines or contributes to the hot gas geometry of the blade [(11)] of the turbine blade [(10)].

3. (Amended) The tool [Tool] according to claim 1 [or 2], wherein
at least two inserts or insets [(7, 8)] are constituted in opposed tool blocks [(1, 2)], such that when assembled they form, for determining the geometry of the blade [(11)], a

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cylindrical insertion unit [(9)] which is rotatable around its longitudinal axis in the tool blocks [(1, 2)] for setting the attack angle of the blade [(11)] and which can be fixed in different rotation positions.

4. (Amended) The tool [Tool] according to [one of claims 1-3] claim 1, wherein the rotatable insert or inset [(7, 8)] can be fixed in rotation positions which respectively differ by about 0.25-0.5°.

5. (Amended) The tool [Tool] according to [one of claims 1-4] claim 1, wherein the, or a further, insert or inset is arranged to be displaceable along an axis in a tool block [(3)] which determines the geometry of the blade platform [(12)], such that in different displacement positions, different heights of the blade platform [(12)] are produced.

6. (Amended) The tool [Tool] according to [one of claims 1-5] claim 1, wherein

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adapters [(14)] are provided which are insertable into interspaces arising between the insert or inset [(7, 8)] and the tool blocks [(1, 2)] and/or between several inserts or insets [(7, 8)].

7. (Amended) The tool [Tool] according to [one of claims 1-6] claim 1,

wherein

at least one insert or inset [(7, 8)] can be fixed in the different positions and/or orientations with respect to the tool block [(1, 2)] by means of securing pins which engage in corresponding recesses in the tool block [(1, 2)].

8. (Amended) The tool [Tool] according to [one of claims 1-7] claim 1,

wherein

the tool blocks [(1, 2, 3, 4)] include, arranged on a baseplate [(15)], a tool block [(1)] for the pressure side of the blade [(11)], a tool block [(2)] for the suction side of the blade [(11)], a tool block [(3)] for the blade platform [(12)], and a tool block [(4)] for the blade band [(13)] of the turbine blade [(10)].

9. (Amended) A process [Process] for [the] production of a shaped part for a turbine blade, comprising the steps of:

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assembling [in which] several tool blocks [(1, 2, 3, 4) are assembled] with positive engagement for [the] formation of a cavity [(5)] which gives the shape of the turbine blade[.];

introducing liquid material[, particularly wax, is introduced] into the cavity [(5)] and hardened in the cavity [(5)].;

removing [and] the tool blocks [(1, 2, 3, 4) are then removed, wherein];

using at least one tool block [(1, 2) is used,] which receives, before the introduction of the liquid material, a rotatable or displaceable insert or inset [(7, 8)] which borders on the cavity [(5)] with a surface, the insert or inset [(7, 8)] being fixed, before the introduction of the flowable material, in a position and/or orientation with respect to the at least one tool block [(1, 2)] in order to set the shape of the cavity [(5)] with the selected position and/or orientation.

10. (Amended) The process [Process] according to claim 9, wherein

the insert or inset [(7, 8)] is fixed in the selected position and/or orientation with respect to the tool block [(1, 2)] by means of securing pins.

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11. (Amended) The process [Process] according to claim 9 [or 10],
wherein,

before the introduction of the flowable material, adapters [(14)] are inserted into
interspaces arising between the insert or inset [(7, 8)] and the tool blocks [(1, 2)] and/or
between several inserts or insets [(7, 8)].

12. (Amended) The process [Process] according to [one of claims 9-11] claim 9
for the adjustment of the attack angle of the blade [(11)] of the turbine blade [(10)] on the
shaped part.

13. (Amended) The process [Process] according to [one of claims 9-11] claim 9
for the adjustment of the height of the blade platform [(12)] of the turbine blade [(10)] on
the shaped part.